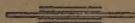


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An intermediate Genus between  
PARODIOPSIDACEAE and MELIOLACEAE

R. Ciferri

A. Chaves Batista

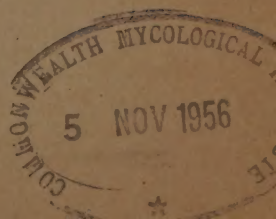


Institute of Mycology

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— 1956 —



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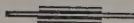
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AN INVESTIGATION OF THE  
RELATIONSHIP BETWEEN  
PHYSIOLOGICAL AND PSYCHOLOGICAL  
FACTORS

BY  
A. C. CROFT

PH.D. THESIS

INSTITUTE OF PSYCHOLOGY  
UNIVERSITY OF MICHIGAN  
ANN ARBOR, MICHIGAN  
— 1916 —



AN INTERMEDIATE GENUS BETWEEN PARODIOPSI-  
DACEAE AND MELIOLACEAE

R. Ciferri \*

A. Chaves Batista

In the same place, on two species of the same genus of host plant two specimens of fungi were collected, having almost the same fundamental characteristics.

On the leaves of the host are found blackish, delimitate colonies, in part of the pellicular type, but in part loose, black, diffuse and adherent to the surface of the leaves. The colonies are not characteristic because several fungi are present on the same leaf, if not on the same spot (imperfect sooty-molds, including species of *Tripospermum*, *Helminthosporium* and a *Dactylosporium* — like fungus).

The mycelium is superficial, olive-brown in color, reticulate-branched, not or very little septate and occasionally constricted at the septa, without setae in the type species, but with setae in the variety.

.....  
\* From University of Pavia — Italy — Specially invited by the Rector Prof. Joaquim Ignacio de Almeida Amazonas to do research in the Institute of Mycology — University of Recife.

A number of peculiar hyphopodia, scarce and scattered, but in some places, abundant, are found. This mycelic organs are similar to the mucronate hyphopodia of the Meliolineae, but from short to very long, ampulliform to cylindric-acutate. The perithecia are superficial on the mycelium, but the mycelium climbs on the lower half of the ascocarp, namely, up to the setiferous region.

The perithecia are globose, at first fully parenchymatic in structure, then membranaceous and softer, without ostiole, but opening by lysis of the upper part. Many simple setae are found on the upper half of the perithecium. When present, the mycelic setae are allied to the perithecial one, or the former septate and the latter not septate, rigid and opac to softer and brown-black at the base, lighter at the tip. When ripe, the perithecium is full of asci, fascicular and radiating from the center. The asci are bitunicate, with 8-spores, as a rule seriate, without paraphyses or paraphysoids. The ascospores are variable from elliptic to fusoid, with more than two transversal septa, hyaline.

In the past this fungus would be considered as pertaining to the Perisporiaceus order, as classically defined by Lindau (in Engler and Prantl's, Nat. Pflanzenf. 1897) and widened by Clements and Shear (Gen. of fungi, 1931), or as accepted by Toro (see below).

This artificial group, meanwhile, has been splitted out by several modern students according to divergent criteria, so that — with exception of a few, well defined genera — the taxonomic picture of some derivated groups is quite confuse.

Admitting this fungus as pertaining to the *Parodiopsidaceae* family, as defined by Toro (Journ. Agric. Univ. Puerto Rico, vol. XXXVI, pag. 66, 1952) it does not agree with the genera listed under the Parodiopsideae tribe (as *Aphanostigme* Syd. = *Dimeriellopsis* Stev.).

In the same way, this fungus does not agree with any known genus of the Erysiphales or Meliolales orders including the older genera of Hyalophragmiae Perisporiaceae, as listed by Miller and Bonar (Univ. Calif. Publ. Bot., vol. XIX, 12, pag. 407, 1941), namely *Vertixore* Mill. & Bon. (now recognized by us as a synonym of *Trichomerium* Spag.).

In the Hansford's memoir (I. M. I., Myc. Pap. n. 15, 1946) hyalophragmious genera are not considered in the Parodiopsideae tribe, while only phaeodidymous and phaeophragmious genera are listed amongst the members of the Meliolaceae family.

The habit of this fungus is clearly meliolaceous in spite of the hyaline ascospores and the bitunicate asci. The mycelium is perisporioid, not melioid, but the appendages greatly resemble

the mucronate hyphopodia, from the usual size to much longer. The perithecia, fully superficial, may be in part surrounded by mycelic hyphae, as a rule up to the portion harbouring the setae. In the variety of the species the mycelic hyphae are creeping around and on the perithecium, including the uppermost part. But the hyphae are scattered and loose, never forming mycelic, pelliculose layer. This feature is unusual on the Meliolineae. The perithecial cavities are full of asci, radiate-fasciculate, and very persistent; both characteristics are not always found on Meliolinae.

In our opinion the most distinctive feature is that the primordium of the perithecium is not radiate-scutate and flattened, as in the best recognized *Meliolae*, but the ascocarp is growing up on the mycelium as a spheroidal body, sclerotoidal in texture and full of hyphae. The differentiation of asci is made from the central core in centrifugal way. When the asci are formed but they are yet young, the section of the perithecium looks like a Parodiopsidaceous fungus, but at maturity there are no remnants of the sterile tissue separating asci. The opening of the perithecium by desintegration of stromal tissue above the top of the locule is a characteristic well developed in the Dothideales or, if accepted, in the Pseudophaeriales order. But the centrum is not of the *Pleospora* type, and the ascocarp is entirely devoid of paraphyses or paraphysoids (for a discussion on the subject see Miller, Mycologia, vol. XLI, pag. 99-127, 1949, and Luttrell, Univ. of Missouri Studies, vol. XXIV, N. 3, pag. 1-120, 1951).

Having in mind the restrictions above made following the treatment of Theissen and Sydow (Ann. Mycol. vol. XIII, pag. 149-746, 1915) our fungus does not agree with *Metameris* Theiss. & Syd., also for the fact that the ascospores are usually more than bisepitate. *Phragmodotella* Theiss. & Syd. is a hyalophragmous genus, but, according to the description of the two known species, one is fully stromatic and dothideoid, and the other possess a large, subepidermic ascocarp, almost galliform. In any case there is no indication about any external mycelium, probably absent.

To sum up, this fungus may be regarded as Meliolaceous, but linking the Meliolaceae with the Parodiopsidaceae families.

In conclusion we are proposing the following new genus: — *Paropodia* Cif. & Bat. n. gen. (ex Paro — diopsidaceae — et hyalo — podia).

.....

Mycelium superficiale, septatus, brunneum, setosum vel non, cum hyphopodius mucronatis usque elongato-acutatis vel apodum, sep-



tatum, multiramosum. Perithecia nuda vel basaliter hypharum tecta, astromatica, brunnea, superficialia, parenchymatica, dein membranacea, astoma, setosa, unilocularia, polyasca. Ascis numerosis, fasciculato-divaricatis, sessiles, vel leviter stipitatis, 8-sporis, aparaphysatis. Ascosporae 1-3 transversaliter septate, laevae, hyalinae.

Typus: *P. intermedia* Cif. & Bat.

**PAROPODIA INTERMEDIA** Cif. & Bat., n. sp.

Coloniis epiphyllis, pelliculosis vel non, superficialibus, delimitatis vel effusis, brunneis usque nigris. Mycelium superficiale, radiato-ramosum vel varie intertextum, ex hyphis brunneo-olivaceis, septatis compositum; hyphis et cellulis cylindraceis, non vel parum constrictis, 7.5-15.3 x 3.5-6 u compositis, sine setis, Fig. 1; hyphopodius mucronatis paucis vel numerosis, irregulariter dispositis, abbreviatis et ampulliformibus, apicaliter acutatis, usque cylindrico-elongatis et acuminatis, 4-26.5 u longis, 4-9 u latis, apice 1.5-3 u diam., Figs. 2, 4-B; peritheciis basaliter ex hyphis myceliaribus paucis cinctis, apicaliter setosis, globosis vel subglobosis, primo parenchymaticis, dein membranaceis, superficialibus, astomis, gregariis vel singulis, 110-140 u altis, 100-120 u latis, unilocularibus, parietis peritheciolorum 2-3-stratosis, 14-24.5 u crassis, ex cellulis polygonalibus, 22.5-70 x 4.5-7.5 u efformatis, extus fusco-brunneis, into dilute brunneis; setis perithecialibus numerosis, simplicibus, erectis continuis vel subseptatis, rectis vel subcurvatis, apicaliter rotundatis vel parum attenuatis, opacis, non ramosis, basaliter abrupte expansi, 22.5-70 x 4.5-7.6 u Fig. 3 e 4 A; ascis numerosis, fasciculato-radiantibus, bitunicatis, sessilibus, ellipsoideis vel subfusatis, 8-sporis, 35-51 x 11-15.5 u, aparaphysatis; ascosporis ellipsoideis vel fusoides, 2-3 septatis, ad septa non constrictis, distyctis, apicibus subatenuatis, 14.5-22 x 4.5-5.5 u, Fig. 4-C.

Hab. in foliis vivis *Citri aurantii* L. cult. Leg. S. J. da Silva, prope Espinheiro. Recife, 4.5.56, 5424 (typus). Institute of Mycology, University of Recife, Brazil.

**PAROPODIA INTERMEDIA** var. **SETOSA** Bat. & Cif. n. var.

A typo recedit mycelio setoso, setis myceliaribus perithecialibusque peraffinis, perithecia usque 200 u diam.; ascosporis incrassatis, 5-7.5 u crassis.

Hab. in foliis vivis *Citri limettae* Risso, Cult. ut in typo, 19.4.56, N. 5441 — Institute of Mycology, University of Recife.

This variety of the same species *P. intermedia* is characterized by the colonies on the lower page of the leaves as well as on the branches, almost pellicular and brownish.

Superficial mycelium composed of brownish to subolivaceous hyphae, poorly hyphopodiate, distinctly septate, little or not constricted at the septa, made by cylindrical cells 6-20 u long and 5-7.5 u wide, flexuous and radiate, producing a thin pellicle; setae scattered, cylindric, 0-2-septate, brown, 47.5-100 x 5.5-7 u and conoid, 11-15 x 2.5-3.5 u; the hyphae are creeping on the perithecia



but without formation of a pellicle; scarce and scattered, frequently short, irregular mucronate hyphopodia, cylindric-ampulliform but abruptly narrowed-acuminate at the top, 8-12 u. long, 3-5 u. in diam. Fig. 5. Perithecia scattered, globose or subglobose, 87.5-200 u. in diam., 75-150 u high, single, brown; astome; walls membranaceous with an outer composed of polygonal cells 5-12.5 u diam., and 2-3 inner hyaline layers; setae on the mycelium around the perithecia, abundant, with the same characteristics described for the mycelic setae on reptant mycelium, Fig. 6 e 7; asci basally fasciculate, ellipsoid, 8-spored, sessile vel shortly stipitate, 40-52 x 15-17.5 u, 2-tunicate, paraphysate; ascospores ellipsoid to clavate, 1-3-septate, little constrict at the septa, hyaline, smooth, polystic, 15-20 x 5-7.5 u, Fig. 6.

On leaves of *Citrus limetta* Risso cult., associated with *Tripospermum fructigenum* (Rabenh. ex Sacc. et Trotter) Hughes, *Helminthosporium* sp., *Phaeoxyphiella* sp., the scale *Orthezia insignis* Douglas is also present. Espinheiro, Recife, Leg. S. J. da Silva, 19.4.56, n. 5441, Institute of Mycology, University of Recife.

The most outstanding difference between the two specimens is that on *Citrus aurantium* (spec. n. 5424) the mycelium is glabrous, while on *C. limetta* (spec. n. 5441) it is setose, in the last specimen the mycelic setae being identic to the perithecial ones. The setae on *P. intermedia* are opac, dull and short, while in the var. *P. intermedia setosa* are longer and scanty and not septate.

On this base alone, we cannot differentiate two species. As one of us repeatedly stated (Ciferri), presence, position, shape and size of setae on *Meliolae* are quite inconstant characteristics, and it is quite possible that the same thing is true for the specimens at hand.

We prefer, then, to put both specimens under the same species, describing the second one as a variety of the former species.

## SUMÁRIO

Nesta publicação os A. A. propõem a criação do novo gênero *Paropodia* Cif. & Bat., que parece ser um elo de ligação filogenética entre as famílias *Parodiopsidaceae* e *Meliolaceae*.

O gênero em tela tem caracteres comuns às duas precitadas famílias e micelio superficial, de hifas septadas, ramificadas, marrom, setosas ou não, com hifopodios mucronados mas sem hifopodios capitados; peritecios parenquimáticos, astomos, setosos, unilocu-

lares, poliascos; ascos bitunicados, 8-esporos, aparafisados; ascospores 1-3 transverso-septados, lisos, hialinos.

A espécie tipo é *Paropodia intermedia* Ciferri & Batista, estudada sobre *Citrus aurantium* L. em colonias epifilas, marron negras, superficiais, de micelio não setoso e peritecios setosos.

Uma variedade, *Paropodia intermedia* var. *setosa* Batista & Ciferri n. var. assinalada sobre *Citrus limetta* Risso também é descrita, distinguindo-se da espécie propriamente dita pela presença de setas no micelio, afora outras discrepâncias de menor importância.

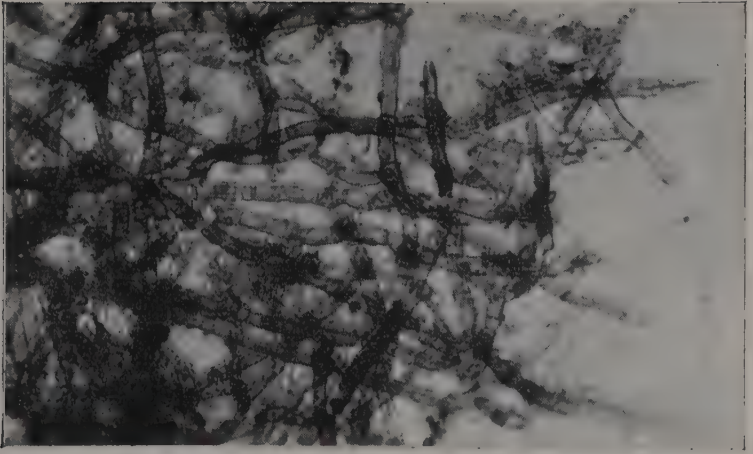


Fig. 1

**PAROPODIA INTERMEDIA** Ciferri & Batista n. sp.  
Mycelic hyphae without hyphopodia.  
450 x

Original.





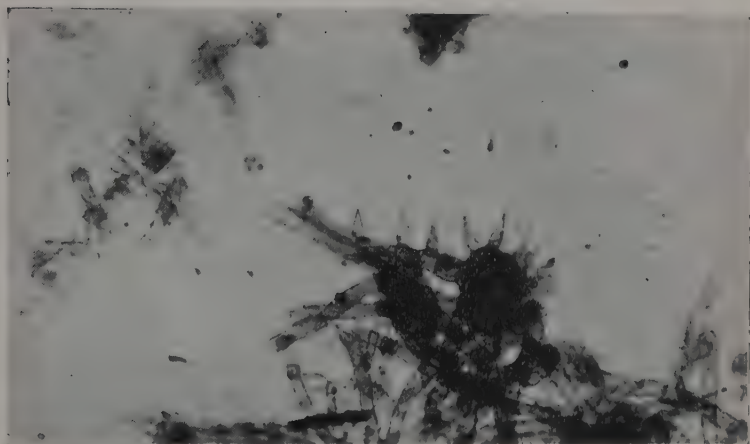


Fig.: 2

**PAROPODIA INTERMEDIA** Ciferri & Batista n. sp.  
Mycelic hyphae with mucronate hyphopodia.

450 x

Original.

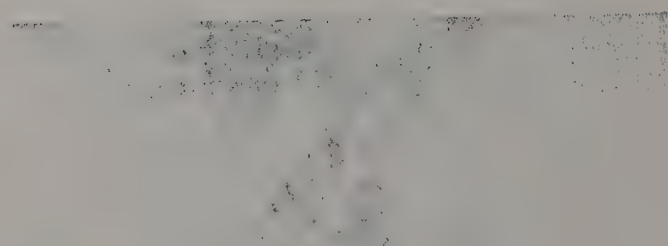






Fig.: 3

**PAROPODIA INTERMEDIA** Ciferri & Batista n. sp.  
Setose perithecium.      450 x      Original.



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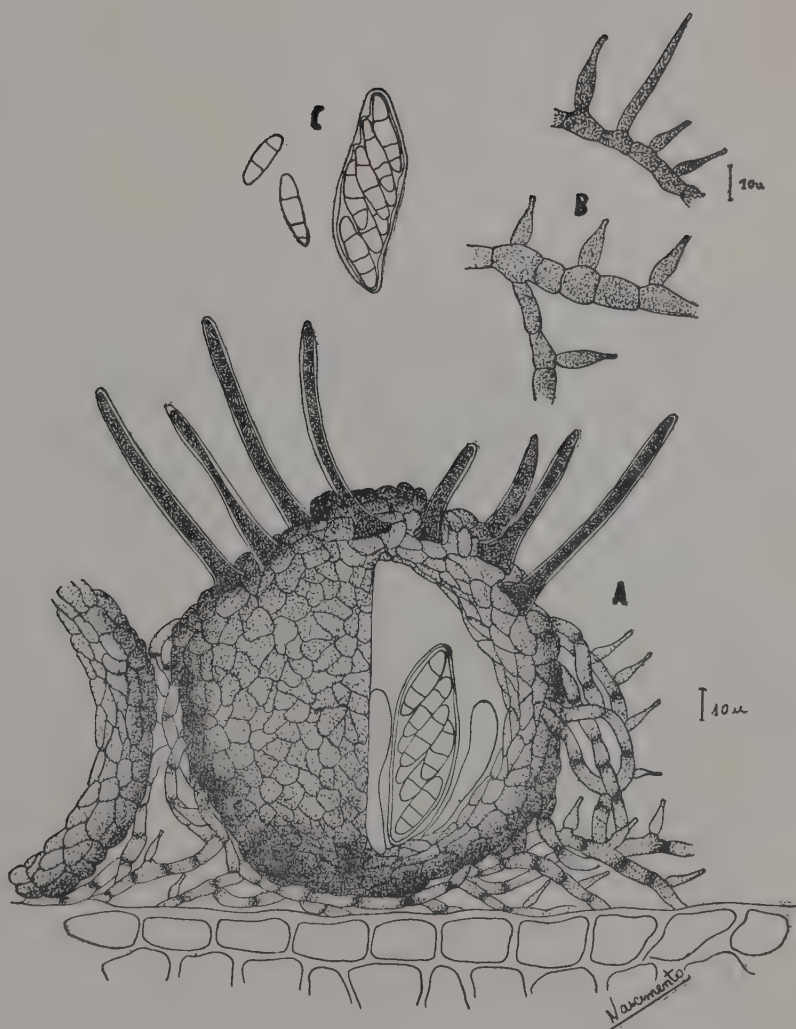


Fig.: 4

**PAROPODIA INTERMEDIA** Ciferri & Batista n. sp.

A — Perithecium

B — Hyphae with mucronate hyphopodia

C — Ascus and ascospores.

Original.





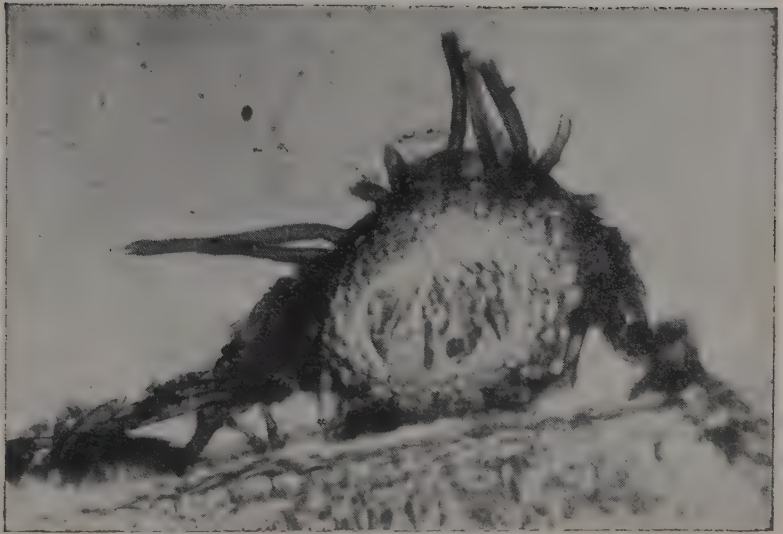


Fig.: 5  
**PAROPODIA INTERMEDIA VAR. SETOSA** Batista &  
Ciferri n. var.  
Perithecium with the mycelic hyphae. Original.





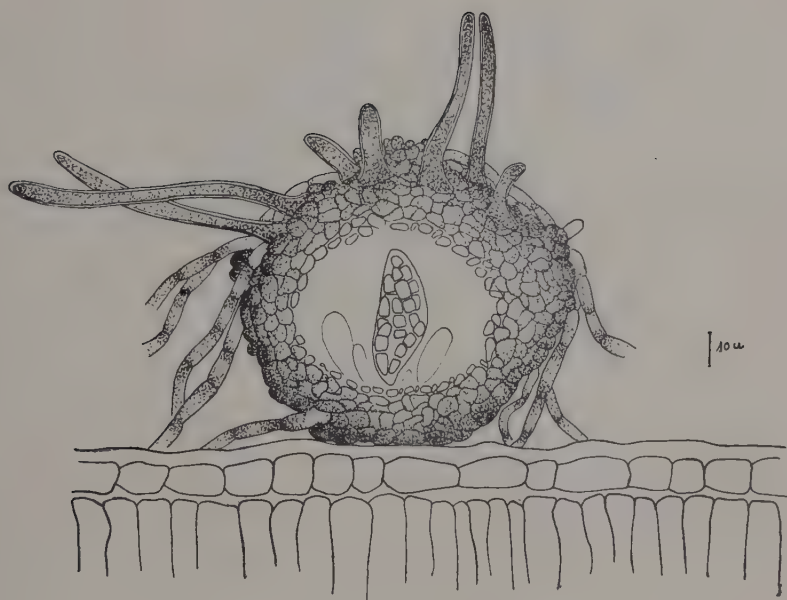


Fig.: 6

**PAROPODIA INTERMEDIA** VAR. **SETOSA** Batista & Ciferri n. var.  
 Perithecium with one ripe ascus. Original.



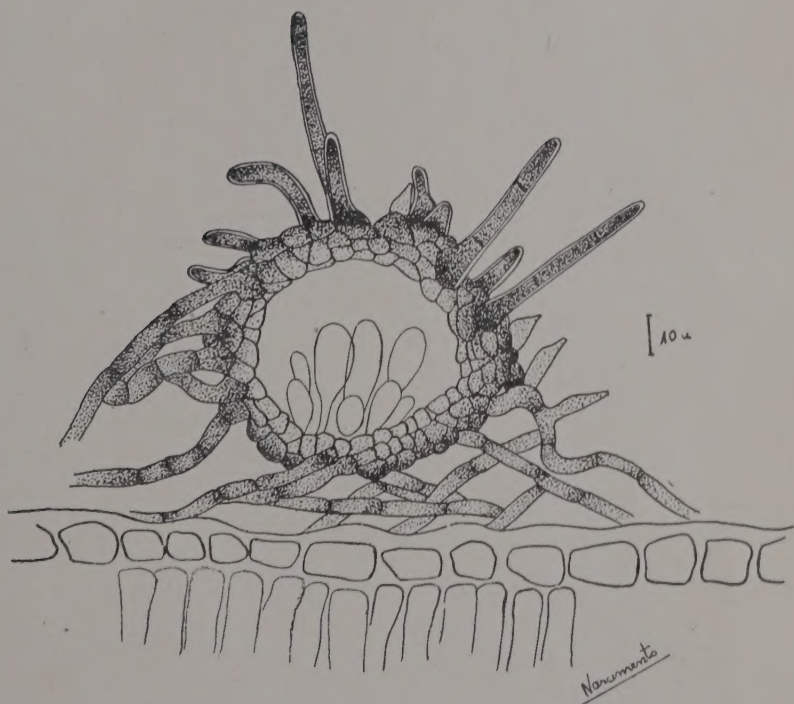


Fig.: 7

**PAROPODIA INTERMEDIA VAR. SETOSA** Batista & Ciferri n. var.  
 A perithecium . Original.





Gráfica IPANEMA  
Rua da Glória, 160

